

CITY OF CHATTANOOGA BIOSOLIDS MANAGEMENT SYSTEM (BMS) MANUAL



**City of Chattanooga – Waste Resources Division
455 Moccasin Bend Road
Chattanooga, Tennessee 37405**



CITY OF CHATTANOOGA – WASTE RESOURCES DIVISION Biosolids Management System Manual

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4/29/2014	Revision 8-Edits as per third party reverification audit-March 20,2014	Sandy Barbee BMS Coordinator



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Section 1 – Purpose and Introduction

This manual describes the Biosolids Management System used by the City of Chattanooga in managing its biosolids activities.

1.1 PURPOSE AND SCOPE

Purpose

The City of Chattanooga “Biosolids Management System” is designed, developed, and implemented to enable biosolids beneficial reuse activities associated with the Moccasin Bend Wastewater Treatment Plant to be continually improved and meet desired outcomes in the areas of:

- Regulatory compliance
- Environmental performance
- Quality biosolids practices
- Relations with interested parties

Scope

The City of Chattanooga Biosolids Management System scope includes all biosolids activities performed by, or on behalf of, the City of Chattanooga throughout the biosolids value chain, including:

- Pretreatment and collection of wastewater
- Wastewater treatment and solids generation
- Biosolids stabilization, conditioning and handling
- Biosolids storage and transportation
- Biosolids use and disposition

1.2 AUTHORIZATIONS

The implementation of this Biosolids Management System that conforms to the National Biosolids Partnership Environmental Management System (EMS) Program is authorized by City Council Resolution Number 25096, adopted on April 24, 2007.

This Biosolids Management System Manual has been approved by the Director-Waste Resources Division, and is finalized by the Plant Manager or higher through the document control server review process:

Alice Cannella, P.E.
Director – Waste Resources Division

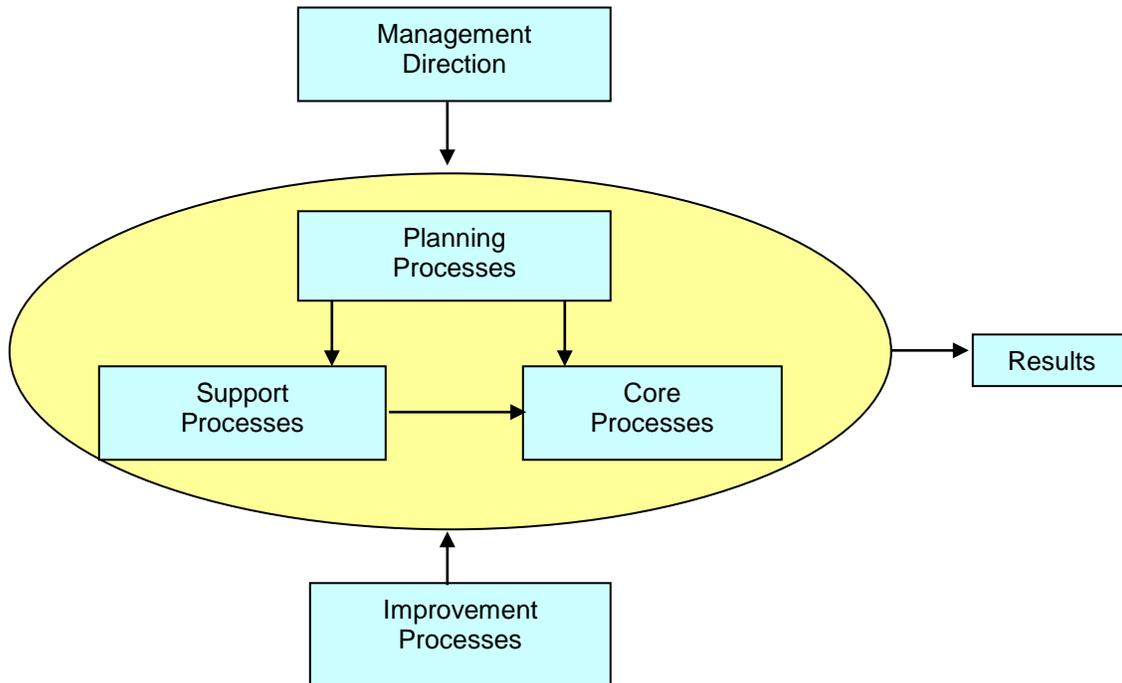
Date Approved



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1.3 INTRODUCTION

This manual describes the City of Chattanooga Biosolids Management System (BMS) and the interaction of processes and procedures used by the Waste Resources Division to support that system. This interaction is illustrated by the flow chart below:



Management Direction: Provide overall goals and directions for biosolids management activities.

Planning Processes: Provide processes used to plan biosolids management activities.

Support Processes: Provide processes used to support biosolids management activities.

Core Processes: Provide processes used to control and monitor biosolids management activities.

Improvement Processes: Provide processes used to improve biosolids management activities.



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Section 2 – Management Direction

Purpose

This section describes processes used in providing direction for the Biosolids Management System.

References

Appendix A - City of Chattanooga Resolution No. 25096

Appendix B – Biosolids Management System Goals, Objectives, and Action Plan

2.1 BIOSOLIDS MANAGEMENT POLICY

The Chattanooga City Council formally adopted a Biosolids Management Policy on April 24, 2007. This policy commits Chattanooga to manage its biosolids activities in a cost-effective and safe manner and in accordance with the ten (10) principles of the National Biosolids Partnership (NBP) Code of Good Practice.

The Biosolids Management Policy forms the core of the management system and is an integral part of management direction. The management review process shall be centered around the Policy and on the improvement of the following desired outcomes:

- Environmental Performance
- Quality Management Practices
- Regulatory Compliance
- Relations with Interested Parties

2.2 BIOSOLIDS GOALS

The City of Chattanooga Biosolids Management Program is intended to help the Waste Resources Division:

- Maintain and improve relations with interested parties
- Maintain and improve biosolids regulatory compliance
- Strive for quality in biosolids management practices
- Continue to improve environmental performance

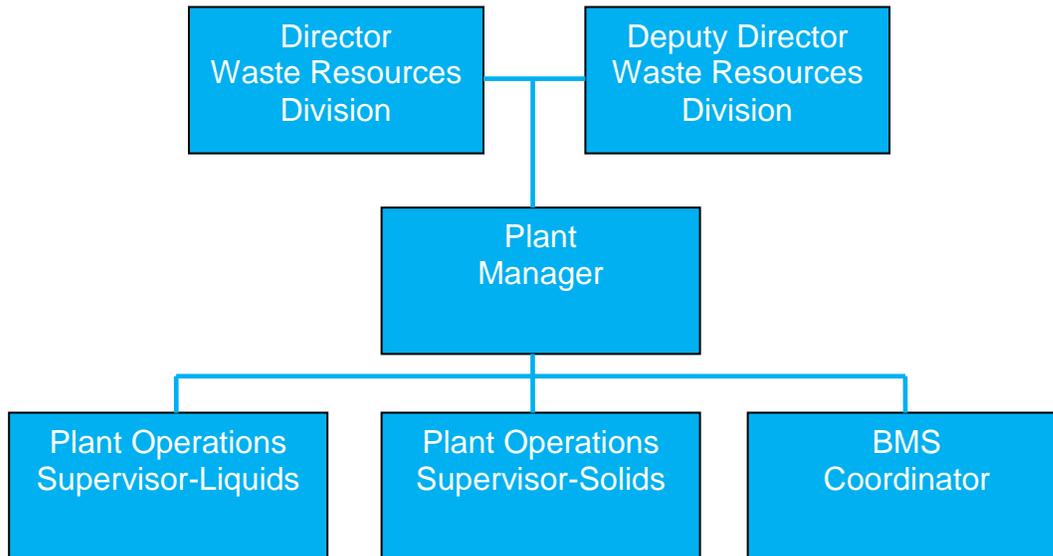
Goals are set and reviewed through the Management Review Process and include consideration of input from the public and strategic direction for the Biosolids Management Program.



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2.3 ROLES AND RESPONSIBILITIES

Lines of authority and responsibilities associated with the Chattanooga Biosolids Management System (BMS) are summarized below.



Description of Roles and Responsibilities

The Director-Waste Resources Division has ultimate responsibility for the performance of the City of Chattanooga Biosolids Management Program, including the provision of necessary human, technical, and financial resources.

The Deputy Director-Waste Resources Division provides support to the Director as needed.

The Director-Waste Resources Division has appointed a Biosolids Management System Coordinator and delegated responsibilities to that person for:

- Implementing and maintaining the Biosolids Management System
- Reviewing and reporting on the performance of the Biosolids Management System
- Communicating with the National Biosolids Partnership and other appropriate persons concerning the Biosolids Management System.

The BMS Management Team includes the Director-Waste Resources Division, the Plant Manager, the Biosolids Management System Coordinator and other persons assigned by the Director-Waste Resources Division. The BMS Management Team is responsible for conducting management reviews and for ensuring the BMS functions effectively.



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Contractors may be assigned to perform biosolids activities on behalf of the City of Chattanooga as determined by the Director and as defined in contracts. Contractor activities included within the scope of this Management System currently include:

- Transportation of biosolids
- Staging & Handling
- Land application of biosolids
- Construction & Maintenance of Equipment

Contractor activities are monitored by routine and random inspections, internal and third party audits, and monthly progress meetings involving both City and contractor personnel.

Other persons have responsibilities within the Biosolids Management System as described in various sections of this manual.

2.4 MANAGEMENT OF CHANGE

Purpose

To plan significant changes that affect the biosolids management system and/or operations of the Waste Resources Division.

Responsibilities

Director-Waste Resources Division and BMS Management Team – implements and completes management of change that may affect significant environmental aspects, significant occupational health and safety risks, or legal requirements.

Director-Waste Resources Division – notifies certifying bodies of significant changes.

Process Description

This process applies to significant changes, including those which significantly impact risks and critical control points as determined by the Director-Waste Resources Division. Such changes can include:

- Changes in legal and other requirements
- Organizational changes
- Equipment and technology changes
- Changes in contractor(s)
- Changes in materials and/or suppliers
- Other changes identified through Management Review



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Procedure

1. Receive pertinent information regarding changing conditions or requirements (such as notification of new regulation).
2. Assess each Biosolids Management System process for that which would be affected by the changing condition or requirement.
3. Assign responsibilities to Waste Resources Division staff.
4. Obtain adequate resources to respond to changing conditions or requirements.
5. Execute the change.
6. Notify certifying agency and the assigned third party auditor of significant process or equipment changes that may warrant a change in the defined critical control points and other areas of the Chattanooga Biosolids Management System.



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Section 3 – Planning Processes

Purpose

This section describes processes within the Biosolids Management System used in planning biosolids program activities.

References

Appendix C – List of Legal and Other Requirements

Appendix D – List of Critical Control Points and Operational Controls

Appendix E – Waste Resources Division Emergency Preparedness and Response Plan

3.1 PUBLIC INPUT

Process Description

Public input is used to help in planning the Biosolids Management System, in developing biosolids goals and objectives and identifying other improvement opportunities. Such input includes meaningful information submitted by interested parties, including the public, regulators, advocacy groups and other stakeholders recognized by the Waste Resources Division. Independent third party audits will be used to verify conformance with the NBP BMP Elements, with all elements reviewed over the course of a five year verification cycle.

Responsibilities

Director-Waste Resources Division – coordinates communications between Waste Resources Division projects and the public via the Public Works Administrator, City Council, and the Mayor's Office.

BMS Management Team – provides relevant information to the public and interested parties and facilitates participation by interested parties in the Biosolids Management System.

Procedure

Public input is obtained through:

- Input from City web site and/or City Council – www.chattanooga.gov
- 311 Call System
- Community Events
- Other means as determined through Management Review



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3.2 COMPLIANCE

Responsibilities

Director-Waste Resources Division – reviews both current and pending legal and other requirements with Waste Resources Division staff.

BMS Management Team – identify, track, evaluate, and implement legal and other requirements for their respective areas of responsibility.

Contractors – identify, track, evaluate, and implement legal and other requirements for their area of service.

Procedure

A. Identification and Implementation of Legal and Other Requirements

Identify legal requirements proactively through networking, communication with regulatory agencies, professional organizations, internet regulatory sites and updates, workshops, and any other available means.

The BMS Management Team identifies legal and other requirements that could be applicable, including any new or changed requirements, and how operations and biosolids activities will respond to those requirements to ensure compliance, including implementation of operational controls as necessary, consistent with the Biosolids Management Policy.

B. Ensuring Compliance

Biosolids activities are monitored continually and compared to legal and other requirements as follows:

- The laboratory monitors biosolids properties against EPA 503 regulations.
- The Plant Operations Supervisor-Solids monitors operations to assure compliance with applicable regulations and permits.
- The Plant Operations Supervisor-Liquids monitors operations to assure consistency with applicable legal requirements.
- The Pretreatment Supervisor monitors industrial discharges that would enter the wastewater stream to ensure compliance with permits.
- The BMS Coordinator monitors contractor activities to ensure consistency with legal requirements.

Any identified inconsistencies with legal and other requirements are addressed through the Corrective and Preventive Action process.



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3.3 IDENTIFICATION OF CRITICAL CONTROL POINTS & OPERATIONAL CONTROLS

Purpose

To identify locations and activities within the scope of the Biosolids Management Program needed to control biosolids quality, compliance with legal and other requirements, public acceptance, and significant environmental impacts.

Responsibilities

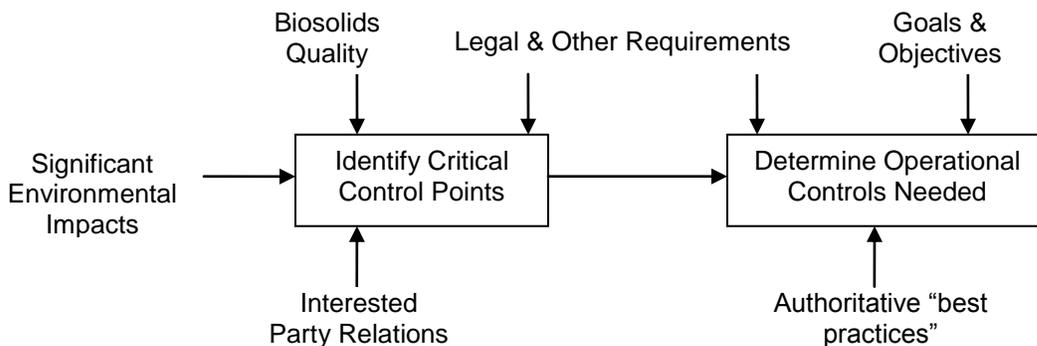
Plant Manager, Plant Operations Supervisor Liquids, and Plant Operations Supervisor Solids – identify critical control points and applicable operational controls.

Process Description

The critical control points are identified based on the need to control:

- Significant Environmental Impacts
- Compliance (with legal and other requirements)
- Biosolids Quality
- Relations with Interested Parties

Operational controls are methods used to ensure desired results are achieved at the critical control points. Desired results include control of significant environmental impacts, compliance (with legal and other requirements), acceptable biosolids quality, acceptable relations with interested parties and achievement of biosolids objectives.





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Procedure

With input from operators and other knowledgeable persons, identify locations and activities (i.e. critical control points) within the Biosolids Program scope where it is necessary to control the following:

- Significant Environmental Impacts
- Compliance (with legal and other requirements)
- Biosolids Quality
- Relations with Interested Parties

Using input from operators and other knowledgeable persons and considering best practices from authoritative sources, such as the National Manual of Good Practice, determine operational controls needed at each critical control point. These controls can include, but not be limited to:

- SOP's
- Work Instructions
- Preventive Maintenance programs
- Personnel competency and skills
- Contracts and purchase orders
- O & M information
- Other controls as appropriate

Review critical control points and operational controls as deemed necessary by the BMS Coordinator and as required by Management of Change.

3.4 EMERGENCY PREPAREDNESS AND RESPONSE

Responsibilities

Director-Waste Resources Division – approves the Emergency Preparedness and Response Plan and any revisions to the Plan.

BMS Management Team – identify emergency situations that may negatively affect the Waste Resources Division and oversee necessary preparations for specific emergencies.

Contractors – establish and maintain emergency preparedness and response plans and procedures for their area of service to the Waste Resources Division.



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Procedure

A. Emergency Preparedness Plans

The Director-Waste Resources Division determines the need for Emergency Preparedness and Response Plans and directs the development of those plans to ensure they appropriately address:

- Potential situations involving health risks, public relations risks, and inconveniences
- The likely type and scale of an emergency situation
- The nature of on-site hazards
- Potential for emergency situations from nearby facilities
- Other local emergency response plans that may influence method(s) for responding
- Internal and external communication plans
- Actions required to minimize environmental damage or safety risk
- Mitigation and response actions

Emergency Preparedness and Response Plan documents are reviewed at least annually as directed by the Occupational Safety Specialist and at other times as directed by the BMS Management Team.

Emergency Preparedness and Response Plan shall include or reference the following:

- Supervisor and employee contact information
- External aid agencies and contact information
- Equipment available
- Roles and responsibilities of individuals involved
- Procedures based on potential to cause environmental impact or health and safety risk

Provide adequate training, checklists, instructions, drills, and simulations as needed for all staff and provide documentation of such training.

Review the Emergency Preparedness and Response Plan for effectiveness through the Corrective and Preventive Action Process following an emergency incident as determined by management. Test emergency response plans through simulations and/or drills and test when significant changes to emergency response plans have occurred.

Revise Emergency Preparedness and Response Plan (Appendix E) as appropriate based on lessons learned from simulated or actual events and through the Corrective and Preventive Action Process.

B. Incident Investigation

Incidents and accidents that cause the Emergency Preparedness and Response Plan to activate are investigated as directed by the Director-Waste Resources Division, and any findings corrected using the Corrective and Preventive Action Process.



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Section 4 – Support Processes

Purpose

This section describes processes within the Biosolids Management System that support the core processes and planning processes to ensure the management system functions effectively.

References

Appendix F- Documents and Records Requiring Control

4.1 COMMUNICATION PROGRAM

Purpose

The “Communication Program” within the Biosolids Management System is intended to proactively provide information about the City’s biosolids activities to employees, contractors and external interested parties.

Responsibilities

Director-Waste Resources Division – coordinates communications between Waste Resources Division staff, other City Departments, the Public Works Administrator, City Council, and the Mayor’s Office.

BMS Management Team – provides relevant information to Waste Resources Division staff, other City Departments, the public and interested parties.

Contractors – provide relevant information in cooperation with Waste Resources Division in the areas of their service agreements.

Procedure

A. Internal Communication

Communicate relevant information internally to managers, employees, and other City departments through various methods including but not limited to staff meetings, special purpose meetings, management review, e-mail, memorandums, postings, the intranet, or other methods.



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Subjects communicated internally include, but are not limited to, the following:

- Chattanooga Biosolids Management Policy
- NBP Code of Good Practice
- Goals, objectives, and action plans
- Legal and other requirements
- Significant environmental impacts
- Performance in achieving outcomes
- Changing circumstances and results

Obtain employee input and suggestions and bring to the BMS Coordinator for consideration. The BMS Coordinator will implement those suggestions that are considered to be appropriate.

B. External Communication

Identify external interested parties, including contractors, and maintain active list to be considered the “Biosolids Sustainability Committee”.

Communicate relevant information, including Policy, to external interested parties, through meetings, public events, City Council, e-mails, letters, brochures, web site, telephone, the media, plant tours, mall shows, 311 Calling System, and other methods. Methods of communication are reviewed and evaluated through interested party feedback, management review, and internal and third party audits.

Invite interested parties to participate in regular meetings in order to communicate their input on environmental impacts, quality management practices, health and safety risks, program performance, and areas for improvement.

Respond to inquiries or requests for information within 24 hours of receipt unless complexity of request requires more time. Maintain records of all inquiries/requests.

Complaints shall be responded to immediately. All complaints received through any communication method shall be brought to the attention of the BMS Coordinator. The BMS Coordinator determines who will be responsible for responding to the complaint, depending on nature of the complaint. All complaints will be entered and tracked in the Biosolids Data Management System.

Bring significant exchanges of communication to management review for documentation, performance tracking, and follow-up.



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4.2 BIOSOLIDS PROGRAM PERFORMANCE REPORTING

Purpose

To prepare a written report for periodically communicating biosolids management program performance to interested parties.

Responsibilities

Director-Waste Resources – reviews, finalizes, and communicates the Biosolids Management Program Performance Report to interested parties.

BMS Management Team – compiles information for the Biosolids Management Program Performance Report.

Procedure

Prepare the Biosolids Management Program Performance Report annually by May 1 to include the following:

- Performance toward achieving biosolids goals
- Performance toward compliance
- Performance of contractor activities
- Third Party Audit Summary
- Internal audit summaries
- Other information that the BMS Management Team deems to be relevant

Communicate this report both internally and externally using methods described in Section 4.1 of this manual.

4.3 DOCUMENT CONTROL AND RECORDKEEPING

Purpose

To identify and control important documents used for managing Waste Resources Division activities and records required to demonstrate Waste Resources Division performance.

Responsibilities

Responsible Person – ensures effective control of their designated document(s) and record(s).

Procedure

A. Control of Documents

Identify documents used for managing biosolids activities that require control and individuals responsible for controlling these documents (Appendix F).



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The person responsible for controlling each document takes steps to:

- Ensure each document is approved for adequacy, identified, dated, readily available, and reviewed as necessary to ensure it is correct, complete, and current.
- Communicate approved changes to persons affected by the change.
- Ensures the correct versions of documents are in use.
- Removes obsolete versions of controlled documents from unintended use.
- Ensures that the most current version of each controlled document and the Document Control and Revision Log are properly updated as necessary and stored on the BMS Server, as applicable.

B. Control of Records

Identify records used for managing biosolids activities that require control and individuals responsible for controlling these records.

The person responsible for controlling each record takes steps to:

- Ensure records are identifiable, legible, secure, readily accessible, and changed only under the authority of the responsible person.
- Ensure records are retained and disposed of consistent with City of Chattanooga records retention requirements.

C. Documents and Records of External Origin

Regulations, job descriptions, material safety data sheets, O&M information for manufacturers are considered to be documents of external origin. The responsible person ensures these documents are readily accessible where needed.

Records retained by contractors are considered to be records of external origin. Such records are controlled as deemed appropriate by the BMS Coordinator so that they are readily accessible and maintained securely.

4.4 COMPETENCY, AWARENESS AND TRAINING

Purpose

To ensure that personnel who perform biosolids activities on behalf of the City of Chattanooga are aware of their responsibilities within the Biosolids Management System and are capable of performing assigned responsibilities safely and effectively.



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Responsibilities

BMS Management Team – evaluate competency and awareness of staff within respective areas of responsibility and assign appropriate training.

Contractors – ensure competency and awareness of personnel in respective areas of service and ensure appropriate training is provided.

Procedure

Identify competency requirements for each job and communicate to staff.

Identify training needs for each job necessary to maintain an acceptable level of staff competency including skills, education, experience and other qualifications. Competency requirements for each specific job are determined by the supervisor of the appropriate area of operation. Required training for Waste Resources Division employees is as follows:

- Job responsibilities
- Biosolids Management System awareness training
- Occupational Health and Safety Training
- Emergency Preparedness Training
- Other training required by legal and other requirements

The BMS Coordinator takes steps to ensure all employees receive BMS Awareness training and that new or re-assigned employees receive this training. Subsequent job specific BMS training is completed annually after the initial BMS Awareness training requirements are fulfilled.

Evaluate staff competency through supervisory review, checklist review, performance reviews, or other methods. Identify inadequacies in competency and correct through additional training.

Training methods include, but are not limited to, the following:

- On-the-job training
- Vendor and start-up training and demonstrations
- Formal classroom training
- One-on-one training
- Self training
- Safety tailgate training
- Other methods

Competency and training records are kept in accordance with Section 4.3 – Document Control and Recordkeeping.



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Section 5 – Core Processes

Purpose

This section describes core processes within the biosolids program that are managed in accordance with requirements of the Biosolids Management System to ensure they function effectively.

References

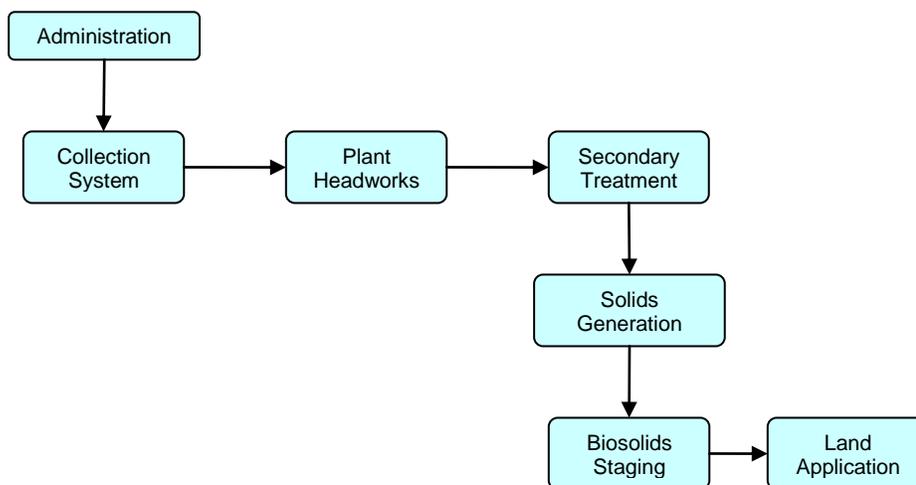
Appendix D - Critical Control Points and Operational Controls

Appendix G - Fact Sheet –Biosolids Land Application Program, Moccasin Bend WWTP, NPDES Permit No.TN 0024210, City of Chattanooga, Tenn
MSDS – General Information, Biosolids (Centrifuge Generated)
MSDS – General Information Biosolids (Filter Press Generated)

Appendix H - Agreement – Contract Services for Beneficial Use of Class A and/or Class B Biosolids from Moccasin Bend WWTP, City of Chattanooga, Tennessee – April 13, 2010

5.1 CONTROL OF BIOSOLIDS OPERATIONS

Activities for biosolids production and use within the City of Chattanooga biosolids program are illustrated in the flowchart shown below.





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Responsibilities

Waste Resources Division Staff – ensure all aspects of production throughout the value chain are appropriately maintained and operated.

Process Description

Biosolids production and use operations and activities are controlled as described under Section 3.3 – Identification of Critical Control Points and Operational Controls and are monitored as described in Section 5.2 – Monitoring and Measuring.

5.2 MONITORING AND MEASURING

Purpose

To ensure a systematic approach for monitoring and measuring biosolids program performance.

Responsibilities

Director-Waste Resources Division – reviews and approves monitoring and measuring activities conducted for compliance with legal and other requirements. Participates in management review of performance and tracking data demonstrating progress towards biosolids program goals and objectives.

BMS Management Team – determine performance measures required for critical control points, operational controls, contractor activities, and goals and objectives.

Contractors – maintain monitoring and measuring data and performance records as required by their respective service agreements.

Process Description

The monitoring and measuring process includes activities used to monitor:

- Daily operations (to ensure compliance with legal and other requirements and achievement of quality requirements)
- Progress towards goals and objectives (to ensure goals and objectives are achieved)
- Performance of the Biosolids Management System (to ensure biosolids program activities are consistent with BMS requirements)



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Procedure

Operators monitor and measure daily operations to ensure compliance with legal and other requirements and consistency with operating procedures using the following:

- WIMS Software system
- Pretreatment Inspection Reports
- Liquid Operation Report
- Biosolids Data Management System
- Operations Log Books, process control logs, and other operational records
- SCADA and data loggers
- Land Application site inspection records
- Contractor evaluations

Maintenance monitors equipment condition using the maintenance management system.

Progress towards goals and objectives is monitored through management reviews.

Consistency with Biosolids Management System requirements is monitored through internal and third party audits.

Any inconsistencies with the requirements may be subject to corrective and preventive action at the discretion of the Biosolids Management Team.

5.3 CONTROL OF CONTRACTORS AND SUPPLIERS

Purpose

To ensure that the services provided by contractors and suppliers result in positive outcomes.

Responsibilities

Director-Waste Resources Division – reviews, approves, and communicates to Public Works management and City Council necessary contractor and supplier services.

BMS Management Team – oversee contractors and suppliers in their respective areas and evaluate performance.

BMS Coordinator – oversees and evaluates contractor activities as authorized and directed by the Director of Waste Resources and Plant Manager.



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Procedure

Use the City of Chattanooga's procedures for identifying, selecting, approving, and awarding of contracts to contractors and suppliers.

Ensure that contractors and/or suppliers are informed of their responsibilities in providing their services, especially as it relates to the Biosolids Management Program. Inform through their contracts, service agreements, letters, memos of understanding, memorandums, or other means of communication.

Ensure that contractors' required responsibilities include, but are not limited to, the following:

- Comply with all applicable legal and other requirements
- Establish and maintain operational controls
- Establish and maintain regular monitoring and measurement procedures and practices
- Prepare and maintain an emergency preparedness and response plan
- Properly train all personnel and/or subcontractor personnel
- Communicate with interested parties in accordance with City policies
- Maintain control of applicable documents and records
- Maintain and provide to City all applicable data and performance measures
- Participate in corrective and preventive action plans

Evaluate the contractor or supplier's performance against established requirements as directed by the Director-Waste Resources Division. Communicate the result of the evaluation to the contractor or supplier. For inadequate performance, require contractor or supplier to submit corrective and preventive action plans for review and approval.

The Director-Waste Resources Division takes action to ensure that continuing inadequate performance by contractors or suppliers is addressed.



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Section 6 – Improvement Processes

Purpose

This section describes processes within the Biosolids Management System used to continually improve the performance of the City of Chattanooga’s biosolids program and results of that program.

References

Appendix B – Biosolids Management System Goals, Objectives, and Action Plan

Appendix I - City of Chattanooga-Waste Resources Division Corrective and Preventive Action Request Form and Plan

Appendix J - City of Chattanooga-Waste Resources Division Biosolids Management System (BMS) Management Review Meeting Agenda form

6.1 BIOSOLIDS OBJECTIVES FOR IMPROVEMENT

Process Description

Objectives for the biosolids program are established to help in achieving goals set forth in Section 2 of this manual and other targets, as directed by the Director-Waste Resources Division.

Procedures have been established for determining biosolids improvement objectives, and associated action plans, to ensure objectives are achieved.

Responsibilities

Director-Waste Resources Division – approves the adoption of biosolids goals and objectives and the associated action plan; reviews performance toward goals.

BMS Management Team – establishes the goals and objectives and monitors and tracks performance toward said goals and objectives.

Procedure

Biosolids objectives are established at least annually by the BMS Management Team and include consideration of:

- Strategic plans
- Policy commitments, biosolids goals and other direction from the Director-WRD
- Input from management reviews, including changing circumstances
- Input from interested parties, as submitted by the BMS Coordinator



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Objectives can also consider:

- Improvement of environmental performance of biosolids management activities
- Best management practices
- Critical Control Points
- Occupational Safety and Health
- Technological Options
- Financial, operational, and business requirements

Ensure objectives use SMART criteria (specific, measurable, achievable, relevant, and time-bound).

Develop a progressive step-by-step action plan for each objective, outlining the timeline and responsibilities for each step of the action plan.

Monitor, measure, and review progress toward goals and objectives at least quarterly during Management Review meetings or other meetings. If progress is determined to be inadequate, the management team may use the Corrective and Preventive Action Process to evaluate the problem.

6.2 INTERNAL AUDITS

Purpose

To perform internal evaluations to determine whether the biosolids program is effectively meeting Biosolids Management Policy commitments, BMS requirements and evaluate the effectiveness of the goals and objectives processes based on progress in achieving the objectives.

Responsibilities

Director-Waste Resources Division – provide training for internal audit team, assist with audit performance, and review audit results.

BMS Management Team – determine the scope of internal audits, provide input during audits, and report findings to management.

Internal Audit Team – conduct audits and report findings back to the BMS Management Team.



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Procedure

The need for internal audits, the scope of such audits, assignment of auditors, and timing of audits, are determined through the management review process. These audits may include, but are not limited to:

- Biosolids program requirements at any value chain step
- Performance in meeting biosolids management policy requirements
- Performance in meeting goals and objectives

The Director-Waste Resources Division determines the necessary qualifications for auditors, including impartiality and any training needed, and approves internal auditors to be used.

Upon completion of audits, a draft audit report is submitted to the BMS Coordinator with findings identified. The BMS Coordinator approves and/or determines corrective action to be taken in response to audit findings. The final audit report includes the status of the corrective action at the time the final report is issued. The BMS Coordinator and Internal Audit Team are responsible for maintaining documents and records relating to the internal audit program.

Corrective actions for findings from audits are addressed using the Corrective and Preventive Action process.

Submit results of internal audits to management for review.

6.3 CORRECTIVE AND PREVENTIVE ACTION

Purpose

To correct and/or prevent inconsistencies in the Biosolids Management Program so that the program can be continually improved.

Responsibilities

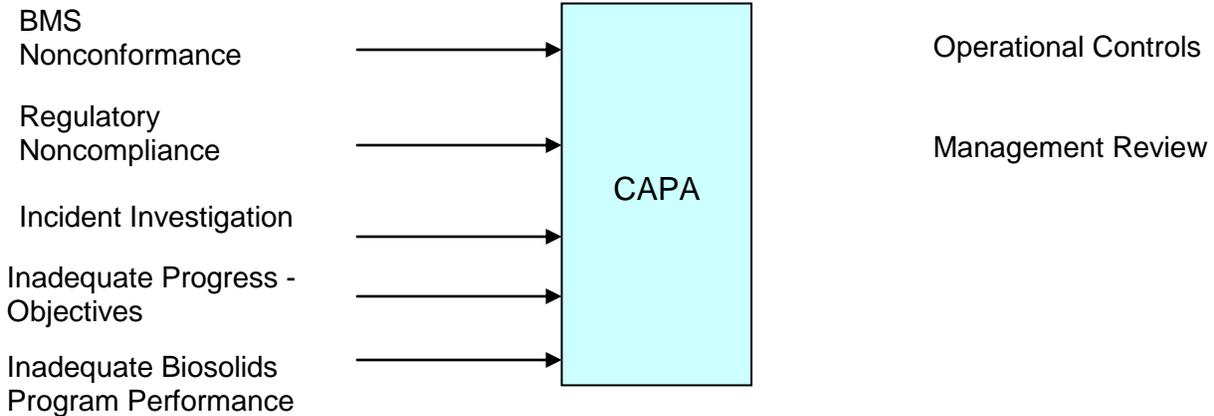
BMS Management Team – assigns and/or participates in performance of corrective and preventive actions. Reviews corrective and preventive actions.

BMS Coordinator – tracks progress in completing corrective actions, analyzes trends, and maintains documentation of corrective and preventive actions.



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Process Description



Procedure

This procedure is used to address inadequate performance in the Biosolids Program.

Any non-compliances and/or non-conformances are referred to the BMS Coordinator. The BMS Coordinator takes action as described below.

Other inconsistencies are also addressed using the procedure described below, including:

- Incidents that cause the Emergency Preparedness and Response Plan to activate
- Lack of progress towards goals and objectives
- Inadequate contractor/supplier performance
- Other deficiencies identified by the Biosolids Management Team

Formal corrective action plans include the following:

- Description of nonconformance
- Identification of root cause
- Actions required to be taken
- Responsible person for the corrective action
- Estimated completion date
- Actual completion date

The BMS Coordinator logs and tracks progress in completing all formal corrective action plans.



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6.4 MANAGEMENT REVIEW

Purpose

To evaluate the suitability, adequacy and effectiveness of the Biosolids Management System and provide direction for continually improving performance of the biosolids program consistent with the Biosolids Management Policy.

Responsibilities

BMS Management Team – evaluates, reviews, and reports the performance, effectiveness, and adequacy of the Biosolids Management System and its related processes.

Process Description



Procedure

Management Reviews are scheduled by the BMS Coordinator to occur at least quarterly.

Management Reviews are conducted by the BMS Management Team using the following agenda:

- Follow up from previous management reviews
- Program performance indicators and results
- Status of progress towards goals and objectives
- External Communication and public relations
- Audit results (as necessary)
- Corrective and Preventive Action
- Review of Biosolids Policy
- Changing Circumstances (MOC)



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Management review meeting minutes are prepared, recorded and communicated as directed by the BMS Coordinator and include conclusions reached during the management review related to the suitability, adequacy, and effectiveness of the BMS based on:

- Biosolids activities that are working well and those that are not working well
- Areas for improvement, including documentation and communication of any changes
- Performance against biosolids policy commitments

Subsequent to management review, changes and follow-up actions to policies, plans, procedures, practices, and other BMP elements that occur as a result of findings and evaluations are documented in the management meeting minutes and tracked by the BMS Coordinator.



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GLOSSARY

Accident – undesired event related to environmental aspects or occupational health and safety risks giving rise to death, ill health, injury, or damage resulting in lost time or workmen compensation.

Action Plan – process used in the management system to achieve goals and objectives, to identify resources, deadlines, responsible parties, and other details required to effect a change or an improvement.

Audit – a systematic investigation to evaluate the effectiveness of the BMS and identify deficiencies to be corrected or resolved.

Auditor – competent person(s) conducting an audit.

Awareness – mindful and conscious of the implication of each action or activity.

Biosolids – solid organic matter recovered from a wastewater treatment process and used especially as fertilizer, usually referred to in the plural.

Biosolids Management Activities – a wide range of activities that impact quality of wastewater solids and biosolids, including pretreatment activities, wastewater treatment processes, solids stabilization processes, conditioning and dewatering processes, transportation, storage, and beneficial use or disposal.

Biosolids Management System (BMS) – comprised of elements/processes that describe and document the way an organization manages environmental aspects and critical control points by identifying the parts critical to compliance, by setting clear and attainable goals, by setting a mechanism for periodic checking of the parts of the system, and by involving the public or stakeholders in the process.

BMS Management Team – the management team includes the Director - Waste Resources Division, the MBWWTP Plant Manager, the Biosolids Management System Coordinator and other persons assigned by the Director - Waste Resources Division.

CAPA—Corrective And Preventive Action plan

Code of Good Practice – broad framework of goals and commitments to guide the production, management, transportation, storage, and use or disposal of biosolids.

Competency – the ability to use knowledge effectively and readily in execution or performance of tasks and activities; a developed aptitude or ability; the ability to do tasks competently.



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Contractors – companies that hold contracts for services, goods, and other activities not directly completed by the City of Chattanooga.

Critical Control Points – anywhere an outcome of a significant environmental aspect or occupational health and safety risk can be changed.

Corrective Actions – specific actions and steps taken to correct the City's noncompliance with legal and other requirements or nonconformance with processes, programs or procedures, to mitigate any resultant impacts to the environment, health and safety, or to public perception.

Documents – information and its supporting medium (paper, magnetic, electronic, computer disc, photograph, or combination thereof).

Emergency – an unforeseen combination of circumstances or the resulting state that calls for immediate action.

Emergency Preparedness – a structured emergency planning process to ensure that plausible emergency situations that can affect appropriate biosolids management have been identified, response plans and procedures have been developed, and trained emergency response personnel and equipment are available and in a state of readiness.

Emergency Response – specific emergency plans and activities that are initiated to contain an emergency situation and bring it under control in order to minimize environmental and occupational health and safety impacts.

Environment – surrounding in which Moccasin Bend Wastewater Treatment Plant operates, including air, water, land, natural resources, flora, fauna, humans, and other interrelation.

Environmental Impact – any change to the environment (positive or negative), including public health, public nuisance, and odor problems, that wholly or partially result directly or indirectly from the organization's activities, products or services, including those activities associated with biosolids management, and those activities that alter (positively or negatively) the acceptable disposal or use method or create public nuisance and public health risks.

Incident – event that may give rise to an accident or has the potential to lead to an accident. An incident where no ill health, injury, damage, or other loss occurs; also referred to as a "near-miss". The term "incident" may include "near-misses," emergency situations, and accidents.



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Interested Parties – individuals or organizations, public or private, affected by the Waste Resources Division activities, those expressing interest in the Moccasin Bend Wastewater Treatment Plant or those the Waste Resource Division believes would be interested in its activities.

Legal Requirements – the environmental and occupational health and safety federal, state, and local laws and regulations that are applicable to the Moccasin Bend Wastewater Treatment Plants activities.

Management of Change – a systematic, standardized process for updating documents, processes, procedures, practices, and training in response to changing conditions and requirements that require modifications to the BMS.

Management Review – addresses the possible need for changes to policy, goals and objectives, or any BMS element/process based on internal audit results, external third-party verification, changing circumstances, and the City's commitment to continual improvement.

Measurement – the systematic method of estimating, testing, or otherwise evaluating key parameters being monitored.

Monitoring – the systematic process of watching, checking, observing, inspecting, keeping track of, regulating, or otherwise controlling key parameters and characteristics of the City's activities to determine compliance with a specific standard, regulatory or other performance requirement, or to measure progress toward goals and objectives.

NBP – acronym for National Biosolids Partnership which is a not-for-profit alliance between the Water Environment Federation (WEF), the Association of Metropolitan Sewerage Agencies (AMSA), and the US Environmental Protection Agency (EPA) whose purpose is to promote safe and environmentally sound biosolids management.

National Manual of Good Practice – detailed set of guidance on the identification of critical control points and the selection of appropriate management practices.

Noncompliance – a deviation from federal, state, and local laws; regulations; and other compliance requirements applicable to the Moccasin Bend Wastewater Treatment Plants activities.

Nonconformance – a deviation from the established program and management system requirements that has the potential to create a noncompliance situation, significant environmental impact, occupational health and safety hazard or risk, or public perception issue.

Objectives – a detailed performance improvement requirement, applicable to Moccasin Bend Wastewater Treatment Plant or parts thereof, that arises from goals, and that needs to be set and met in order to achieve overall goal.



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Operational Controls – ordinances, regulations, standard operating procedures, practices, technology, instrumentation and process controls, monitoring and other criteria developed, implemented and maintained by the Waste Resources Division to ensure effective management of all critical control points, including conformance with policy requirements, and achievement of goals and objectives.

Other Requirements – other binding practices and environmental requirements to which the Waste Resources Division subscribes as part of the BMS. Examples include binding agreements with customers, suppliers, public organizations, and commitments to “beyond compliance” performance.

Performance – measurable results of the BMS, related to the Waste Resources Division’s control of environmental impacts, health and safety risks, and biosolids activities based on its policy, goals, and objectives.

Pollutants – materials such as heavy metals, cyanides, solvents, and others that make water, wastewater and biosolids physically impure if present at certain concentrations.

Preventive Action – specific actions and steps taken to identify, analyze, and eliminate the root causes of noncompliance and/or nonconformance and to put into place solutions that prevent a recurrence.

Public – see *Interested Parties*

Public Education – systematic public communications program for educating interested parties and other stakeholders on the Moccasin Bend Wastewater Treatment Plant’s activities.

Public Outreach – refers to communicating current and future biosolids plans and operations.

Records – refers to various reports of activities required by the management system, and applicable laws and regulations, including but not limited to reports of equipment calibration, monitoring, measurement, laboratory testing, inspections, operating logs, emergency response, incidents, outside party inquiries, public participation meetings, audits, corrective and preventive actions, management reviews, and periodic performance reports.

Responsibilities – specific tasks that an individual performs in either a lead or supporting role that accomplishes and/or supports goals and targets.

Risk – combination of the likelihood, severity and consequence(s) of a specified hazardous event occurring.

Role – the activity that an individual performs as a part of the BMS.



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Safety – freedom from unacceptable risk or harm.

SMART Criteria – the criteria that define and evaluate the suitability of a practical goal or target. A goal or target is **s**pecific, **m**easurable, **a**chievable, **r**elevant, and **t**ime-bounded.

Standard Operating Procedure (SOP) – standard work instructions and practices for employees describing the “how to” steps in managing the aspects, risks, and critical control points of a specific management activity affecting wastewater utilities, compliance with legal and other requirements, and health and safety risks.

Third Party Verification Audit – a systematic, structured audit of the Moccasin Bend Wastewater Treatment Plant management system, performed by a qualified independent third party auditor using a standardized protocol for verification.

Training – teaching to make fit, qualified, or proficient; preparation for a test of skill or knowledge; instruction in disciplines and techniques.



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List of Appendices

Reference is made to the separate document “City of Chattanooga Biosolids Management System (BMS) Manual Appendices” which contains all materials noted in the list below:

<u>Appendix</u>	<u>BMS Manual Section</u>
A. City of Chattanooga Resolution No. 25096	2
B. Biosolids Management System Goals, Objectives, & Action Plan	2 & 6
C. List of Legal and Other Requirements	3
D. List of Critical Control Points & Operational Controls	3
E. WRD Biosolids Emergency Preparedness & Response Plan	3
F. Documents & Records Requiring Control	4
G. Fact Sheet – Latest Calendar Year - Biosolids Land Application Program Moccasin Bend WWTP - NPDES Permit No. TN 0024210 - City of Chattanooga, Tennessee MSDS – General Information – Biosolids (Centrifuge Generated) MSDS – General Information – Biosolids (Filter Press Generated)	5
H. Agreement – Contract Services for Beneficial Use of Class A and/or Class B Biosolids from Moccasin Bend WWTP City of Chattanooga, Tennessee (April 13, 2010)	5
I. CAPA (Corrective and Preventive Action Request Form) Corrective and Preventive Action Plan	6
J. City of Chattanooga – Waste Resources Division Biosolids Management System (BMS) Management Review Meeting Agenda	6